[Sir Roger de Coverley.]

SIR ROGER DE COVERLEY.—No. III.

The fame of the Spectator's Sir Roger de Coverley was revived some twenty years ago by one of the most beautiful pictures of the modern English school, the charming representation, by Newton, of the fine old squire coming out of church, amidst the reverential greetings of his affectionate tenantry. This was a real old English scene; and such as touched our sympathies even in an age when much of this cordial intercourse between the great and the humble has passed away.

The paper of the 'Spectator' upon which this picture is founded is by Addison, and in his best style:—

"I am always very well pleased with a country Sunday, and think, if keeping holy the seventh day were only a human institution, it would be the best method that could have been thought of for the polishing and civilizing of mankind. It is certain the country-people would soon degenerate into a kind of savages and barbarians, were there not such frequent returns of a stated time, in which the whole village meet together with their best faces, and in their cleanliest habits, to converse with one another upon different subjects, hear their duties explained to them, and join together in adoration of the Supreme Being. Sunday clears away the rust of the whole week, not only as it refreshes in their minds the notions of religion, but as it puts both the sexes upon appearing in their most agreeable forms, and exerting all such qualities as are apt to give them a figure in the eye of the village. A country fellow distinguishes himself as much in the

churchyard, as a citizen does upon the 'change, the whole parish politics being generally discussed in that place either after sermon or before the bell rings.

"My friend Sir Roger, being a good churchman, has beautified the inside of his church with several texts of his own choosing. He has likewise given a handsome pulpit-cloth, and railed in the communion-table at his own expense. He has often told me, that at his coming to his estate he found his parishioners very irregular: and that in order to make them kneel, and join in the responses, he gave every one of them a hassock and a Common Prayer-book; and at the same time employed an itinerant singing-master, who goes about the country for that purpose, to instruct them rightly in the tunes of the Psalms, upon which they now very much value themselves, and indeed outdo most of the country churches that I have ever heard.

"As Sir Roger is landlord to the whole congregation, he keeps them in very good order, and will suffer nobody to sleep in it besides himself; for if by chance he has been surprised into a short nap at sermon, upon recovering out of it he stands up and looks about him, and if he sees anybody else nodding, either wakes them himself, or sends his servants to them. Several other of the old knight's particularities break out upon these occasions. Sometimes he will be lengthening out a verse in the singing Psalms, half a minute after the rest of the congregation have done with it; sometimes when he is pleased with the matter of his devotion, he pronounces Amen three or four times in the same prayer; and sometimes stands up when everybody else is upon their knees, to count the congregation, or see if any of his tenants are missing.

"I was yesterday very much surprised to hear my old friend, in the midst of the service, calling out to one John Matthews to mind what he was about, and not disturb the congregation. This John Matthews it seems is remarkable for being an idle fellow, and at that time was kicking his heels for his diversion. This authority of the knight, though exerted in that odd manner which accompanies him in all the circumstances of life, has a very good effect upon the parish, who are not polite enough to see anything ridiculous in his behaviour; besides that the general good sense and worthiness of his character make his friends observe these little singularities as foils that rather set off than blemish his good qualities.

"As soon as the sermon is finished, nobody presumes to stir till Sir Roger is gone out of the church. The knight walks down from his seat in the chancel between a double row of his tenants, that stand bowing to him on each side; and every now and then inquires how such a one's wife, or mother, or son, or father do, whom he does not see at church; which is understood as a secret reprimand to the person that is absent.

"The chaplain has often told me, that upon a catechising day, when Sir Roger has been pleased with a boy that answers well, he has ordered a Bible to be given to him next day for his encouragement, and sometimes accompanies it with a flitch of bacon to his mother. Sir Roger has likewise added five pounds a year to the clerk's place; and, that he may encourage the young fellows to make themselves perfect in the church service, has promised upon the death of the present incumbent, who is very old, to bestow it according to merit.

"The fair understanding between Sir Roger and his chaplain, and their mutual concurrence in doing good, is the more remarkable, because the very next village is famous for the differences and contentions that arise between the parson and the 'squire, who live in a perpetual state of war. The parson is always preaching at the 'squire, and the 'squire, to be revenged on the parson, never comes to church. The 'squire has made all his tenants atheists and tithe-stealers, while the parson instructs them every Sunday in the dignity of his order, and insinuates to them, in almost every sermon, that he is a better man than his patron. In short, matters are come to such an extremity, that the 'squire has not said his prayers either in public or private this half-year; and the parson threatens him, if he does not mend his manners, to pray for him in the face of the whole congregation.

"Feuds of this nature, though too frequent in the country, are very fatal to the ordinary people; who are so used to be dazzled with riches, that they pay as much deference to the understanding of a man of an estate as of a man of learning; and are very hardly brought to regard any truth, how important soever it may be, that is preached to them, when they know there are several men of five hundred a-year who do not believe it."

The quiet humour of this pleasant description furnishes in itself a tolerable example of the state of opinion in the reign of Queen Anne—our Augustan age, as it has often been called. It shows the cold and worldly aspect which the most solemn institutions presented to the eye of the conventional moralist. There is something much higher in the association of Christians in public worship than even the good of meeting together with "best faces and cleanliest habits." Sunday is to be observed for something better than "clearing away the rust of the week," and "putting both sexes upon appearing in their most agreeable forms." But for too long a period this has been very much the orthodox notion of Sunday and Sunday duties; and the real purpose of public worship, that of calling forth the spiritual and unworldly tendencies of our nature, to the exclusion of the ambition and vanity of every-day life, is only beginning yet to be generally felt in town or village. We lost for two or three centuries the zealous spirit which made the cathedral and the church a refuge from the hard and irritating cares which belong to a life of struggle and vexation; which there lifted us up to a calm and earnest reliance on the protection of the great Father of all; which made all men equal in their capacity for partaking of this elevation of spirit; which for a while excluded the distinctions that belong to transitory things alone. The solemn responses, the soul-uttering chants, the assembling together in temples venerable for their antiquity and impressive in their beauty, gave a loftier tone to the mind of the most uninformed than belongs to the discussion of parish politics "after sermon or before the bell rings." A reform of somewhat too sweeping character changed the feelings of the people. Religion came either to be looked at as a severe thing or as a formal thing; and then followed what Addison has painted too truly in the conclusion of his paper, "the differences and contentions between the parson and the 'squire." In this respect we may earnestly hope that the description of the Essayist is wholly obsolete.

PROGRESSES OF QUEEN ELIZABETH.

No. III.

THE QUEEN AT CAMBRIDGE.

IN 1563 there appears to have been no progress. London was suffering through a dearth, a scarcity of money, and from the prevalence of the pestilence, which had been introduced by the troops who had been unsuccessfully defending Hâvre under the Earl of Warwick. Of this disorder more than 20,000 of the citizens died; and, according to Holinshed, the Queen ordered that "the new mayor elected should keep no feast at Guildhall, for doubt that through bringing together such a multitude the infection might increase."

In 1564, on the 27th of July, the Queen was again on her Progresses, and was at the Lord Treasurer Cecil's house at Theobalds, afterwards at her own house at Enfield, and on the 5th of August she reached Cambridge, where extensive preparations had been made for her reception. The students had been directed to "put themselves in all readiness to pleasure her Majesty, and to welcome her with all manner of scholastical exercises, viz., with sermons, both in English and Latin; disputations in all kinds of faculties, and playing of comedies and tragedies, orations and verses, both in Latin and Greek, to be made and set up ..... in the way that her Majesty should go or ride:" "provision of beer, ale, and wine was sent to the King's College," where she was to lodge; and "the Vice-Chancellor and the Mayor took order for the well-paving of all the town, and that every inhabitant should provide sufficient sand to cover the streets at the coming of the Queen's Majesty."

Sir William Cecil, who was Chancellor of the University, and Lord Robert Dudley (afterwards Earl of Leicester), the Lord High Steward, with a numerous train, arrived on the previous day to her Majesty, to assist in the preparations; they were received with much ceremony, and to each of them was presented, as also to the Duke of Norfolk, the steward of the town, "two pair of gloves, a march-pain,* and two sugar-loaves;" while the Earl of Suffolk and the rest of the nobility had gloves, but no march-pain or sugar-loaves."

On the 5th the whole University met the Queen at the corner of the Queen's College and Martin Gill's house, "the whole lane between the King's College and the Queen's College was strewed with rushes, and flags hanging in divers places, with coverlets, and boughs, and many verses fixed upon the wall," the scholars crying, as commanded, "Vivat Regina," lowly kneeling. The corporation of the town had met her Majesty a little above Newnham, and delivered to her the mace, with "a fair standing cup, which cost 19*l.*, and twenty old angels in it," which she received, returning the mace to the mayor, and giving the cup with the angels to her footman. She was on horseback, dressed "in a gown of black velvet pinked; a caul upon her head, set with pearls and precious stones; a hat that was spangled with gold, and a bush of feathers." The orator of the University then made his speech in Latin. "First he praised and commended many singular virtues set and planted in her Majesty, which her Highness not acknowledging of, she shaked her head, bit her lips and her fingers; and sometimes broke forth into passion, and these words: 'Non est veritas, et utinam;'" but on his praising virginity, she replied, "God's blessing of thine heart, there continue." At the conclusion, she commended the speech, adding, "That she would answer him again in Latin, but for fear she should speak false Latin, and then they would laugh at her." She then dismounted, and was conducted under a canopy into King's College Chapel, where prayers were said, but the Queen declining to join in the service, prayed privately; she greatly praised the beauty of the chapel as "above all other within her realm."† On her leaving the chapel for her lodgings in King's College, there were presented to her, in the name of the University, "four pair of Cambridge double gloves, edged and trimmed with two laces of fine gold, and six boxes of fine comfits and other conceits." On the following day, which was Sunday, the Queen attended service in the chapel in the morning, praising the Latin sermon as the first she had ever heard in that tongue, and never hoped to hear a better. From hence she was conducted back under a canopy borne by four doctors, "which the footmen as their fee claimed, and it was redeemed for 3*l.* 6*s.* 8*d.*" On this day the chancellor and vice-chancellor entertained the University at dinner, to which the Queen sent five bucks. She attended even-song, "which ended, she departed back by the same way to the play 'Aululariæ Plauti;' for the hearing and playing whereof was made by her Highness' surveyor, and at her own cost, in the body of the King's College Church, a great stage, containing the breadth of the church from the one side to the other, that the chapels might serve for houses. In the length it ran two of the lower chapels full, with the pillars on a side." Her Majesty sat on the south side under a cloth of state, the rood-loft was made into a stage for ladies and gentlemen to stand in, and the tables beneath it were "enlarged and railed in for the choice officers of the court. A multitude of the guard stood upon the ground by the stage-side, having every man in his hand a torch-staff for the lights of the play (for no other lights were occupied); and would not suffer any to stand upon the stage, save a very few upon the north side." With this curious account of the formation and location of the stage, we have little or nothing of the play. "The Queen took her seat, and heard the play fully," is all that is told us, and that about twelve o'clock she departed to her lodgings.

On the Monday she attended disputations in philosophy and physic in St. Mary's Church, where a great stage was provided for the purpose, from one o'clock in the afternoon till seven, declaring herself well entertained, but detecting faults in the dresses of some of the dignitaries, and noting that some Masters were "but Masters, because their habits and hoods were torn and too much soiled." At nine she attended the performance of 'Dido,' a tragedy, "in hexametic verse," in King's College Chapel.

On Tuesday there was nothing public, the Queen holding a privy council in the south vestry; but in the evening she again visited the theatre in King's College Chapel to witness the performance of a play in English called 'Ezekias.' This play was the production of Dr. Nicholas Udall, Master of Eton College, the author of 'Ralph Royster Doyster,' the earliest existing English comedy.

On Wednesday, at six in the morning, "riding in state royall, all the lords and gentlemen riding before her Grace, and all the ladies following on horseback," the Queen visited Clare Hall, King's College, Trinity Hall, Gonvill and Caius, Trinity, St. John's, Christ's, and Benet Colleges, Pembroke Hall, Peter House, Queen's College, and Katherine Hall, being addressed at most of them with an oration; those at Trinity and Christ's College being in Greek, to the latter of which she replied in the same language; talking much with students in Latin during her progress, and dismissing them on her return in that language. At three she attended the disputations in divinity, which were stayed at seven o'clock, before they were ended;" and "the night coming on, clean took away the disputation of the lawyers." At the end, the lords, especially the Duke of Norfolk, the Steward of the Town, and Lord Robert Dudley, the High Steward of the University, "kneeling down, humbly desired her Majesty to speak something to the University, and in Latin: this, after some affected reluctance, she did at considerable length, and of which we give the translation of the following complimentary conclusion:—"But now you see the difference between true learning and an education not well retained. Of the one of which you yourselves are all more than sufficient evidence; and of the other, I, too inconsiderately indeed, have made you all witnesses. It is time then

* A sort of confection or sweetmeat, made of almonds, sugar, and other ingredients.

† For a view of the chapel, see No. 262.

that your ears, which have been so long detained by this barbarous sort of an oration, should now be released from the pain of it." But the auditors were all "marvellously astonied," and burst forth in open voice "Vivat Regina!" "And so her Majesty cheerfully departed to her lodging;" declining to be present at the performance of the 'Ajax Flagellifer' of Sophocles, being fatigued with visiting the colleges, attending the disputations, "and over-watched with former plays, as it was very late nightly before she came to them, as also departed from them; and beside intending to leave Cambridge early in the morning."

There appears to be little at all worthy of remark in the reception of the Queen at Cambridge. A book was prepared for her Majesty, previous to her coming, "containing all their verses, both of Greek and Latin, Hebrew, Chaldee, and English, bound in a parchment covering, gilt with flowers of gold at the four corners, knit with green ribband string;" but nothing of them has been preserved. Of the members of the University, the only one who appears to have been distinguished by her Majesty, was Thomas Preston, "who acted so admirably well in the tragedy of 'Dido,' and did so gracefully dispute before her, that she gave him 20*l.* per annum for his so doing." A most notable instance of liberality in the Queen, who was generally sparing in such rewards. Preston's antagonist in these disputations was Thomas Cartwright; and Fuller, in his 'History of Cambridge,' remarks, "Cartwright had dealt most with the Muses; Preston with the Graces. Cartwright disputed like a great, Preston like a gentle, scholar. And the Queen, upon parity of defects, always preferred properness of person." Preston, who with her host Dr. Baker, the Provost of King's College, and others, met her at nine o'clock on Thursday morning on her departure, made a farewell oration, with which she was so well pleased, that she gave him her hand to kiss, and "openly called him *her scholar*."

She proceeded from Cambridge to the Bishop of Ely's at Stanton, and from thence to Sir Henry Cromwell's at Hinchinbrooke Priory.

In 1565 she visited the newly-made Earl of Leicester at Kenilworth, passing through Coventry, where the corporation received her magnificently, the recorder, John Throgmorton, whom she knighted, making her a complimentary oration, and presented her in the name of the town with a purse, "supposed to be worth twenty marks, and in it about 100*l.* in gold angels, which her Grace accepting, was pleased to say to her lords, it was a good gift, 100*l.* in gold; 'I have but few such gifts.' To which the mayor answered boldly, 'If it please your Grace, there is a great deal more in it.' 'What is that?' said she. 'It is,' said he, 'the hearts of all your loving subjects.' 'We thank you, Mr. Mayor,' said she: 'it is a great deal more indeed.'" It was in a great measure by this happy public affability that Elizabeth acquired and retained to such an extent as she did the personal affections of her people.

The visits to Kenilworth were repeated in 1568 and 1575. The last was distinguished by its unbounded magnificence, but as Kenilworth has been already described in Nos. 59, 213, and 664, where we have given views of the past and present state of the castle, we shall not have occasion to go over the ground again.

[Foo-choo-foo.]

FOO-CHOO-FOO.

NING-PO, of which we have given an account in No. 639, is the next of the free ports south of Shang-hae: to this succeeds Foo-choo-foo, the capital and principal port of the province of Fo-kien, where chiefly the black tea is produced which is imported into this country, and a considerable quantity of tobacco is also grown.

Foo-choo-foo lies on the north-east coast, in the Fo-kien Channel, in about 26° N. lat. and 119° E. long., on the banks of the Min-ho, which empties itself into

the Bay of Ho-sien, and about thirty miles from the river's mouth called Woo-foo-min. Fort Minga, which defends the passage of the Min, is situated about twelve miles from the river's mouth, and is the only servicable fortress, although numerous others in a dismantled state dot the banks on each side in going up, and add to its picturesque beauty. The war-junks go no higher than Mingan.

On leaving Mingan the channel narrows to much less than half a mile broad, and, a few miles higher up, divides into two branches, the northern one of which leads to the city: the banks of the river are dotted with the richest verdure, and in some places the bold appearance of the mountains, rising abruptly to a height of several thousand feet, is very remarkable: they are cultivated to the very ridges with grain, rice, and paddy, adding to the beauty of the scenery, which is further heightened by bold bluff points jutting abruptly into the river.

On reaching one of these points, which terminates the circuitous and serpentine direction of the branch of the river from Fort Minga, the town of Foo-choo-foo breaks upon the view in all its splendour, the bridge of thirty-six arches (and not thirty-three, as erroneously stated by some) stretching across the river, the banks on both sides dotted here and there with picturesque pagodas and the country-seats of the mandarins of rank, and luxuriating in all the richness of tropical vegetation; the stately palm-tree, cocoa and betel-nut, combined with the plantain and banana, being seen here in all their native beauty. The effect is greatly heightened by the numerous and various kinds of picturesque boats which dot the river, from the humble sampan to the unwieldy junk; whilst close to the town appears a forest of masts belonging to different coasting craft: the river above bridge winds away into serpentine obscurity, and the background is terminated by lofty mountains fading away into the blue distance.

The town is built on both sides the river, and consists of the usual low houses of Chinese architecture and narrow streets, which, however, are necessary to guard against the powerful rays of the sun.

The bridge, which is built on diamond-shaped piles of granite, is a clumsy-looking affair upon close inspection, although at a distance it assumes so picturesque an appearance: its length is about four hundred yards, and breadth twelve to thirteen: there were formerly temporary shops constructed upon it, but they are now nearly all removed.

The anchorage at Foo-choo-foo is good, and of course, from its inland situation, perfectly secure: there is always from four to five fathoms water, the current is very rapid, the flood-tide scarcely perceptible.

The inhabitants appear courteous and mild in their manners, but intercourse with them was checked by the interference of the mandarins: they appeared a much superior race of people from those we met at Canton, and, as at Amoy, are hardy and industrious.

A great trade is carried on with the neighbouring province of Che-kiang in wood, timber, and tobacco; but a number of junks from Foo-choo-foo find their way to Manilla, Singapore, and other islands in the Eastern Archipelago, touching generally in the first instance at Amoy, from whence the best sea-going Fokien sailors are selected to man the sea-junks. Dried fruits, amongst others the lee-chee, are likewise largely exported.

The importance of Foo-choo-foo to British enterprise must be extremely great, as vessels of a large burthen can lay within seven or eight miles of the city, whence the tea can be loaded at once from the large chop-boats of the country, which, by means of the Min and its branches, have an easy water-communication with the tea-farms of the interior. Mr. Davis, in his 'Sketches of China,' observes in relation to its commercial importance:—"By the restrictions which have confined the tea-trade to Canton we have been obliged to pay for the transport of the black teas over an immense distance, in which lofty mountains are to be crossed, and shallow rivers navigated with great difficulty, involving the additional charge of about 25*s.* in every pecul weight (133 lbs.), or about 200,000*l.* on the annual supply. Mr. Ball, formerly inspector of teas to the Company at Canton, first drew attention to this subject many years ago, and his calculations seem to have been verified since. Should we, therefore, ever be in a situation to choose the most advantageous position for the tea-trade, there seems to be no doubt of Foo-choo-foo being the port selected. But it is not on account of teas only that the city in question has been singled out as the most favourable for the British trade: some calculations and estimates exist to show that for our woollen and other manufactures Foo-choo-foo must be infinitely superior to Canton, as being much nearer to the places of consumption. In this single view of the question, however, and apart from the main article of teas, it is most probable that Shang-hae is superior to Foo-choo-foo."

The climate of Foo-choo-foo is on the whole healthy, and would be more so but for the filthy state of the streets in the city and suburbs, where offal of all kinds is thrown indiscriminately about, producing an odour very offensive to the senses. The mountains in the vicinity likewise tend to its salubrity by rarefying the air: in winter the cold is felt severely; as is also the heat in summer, when the exhalations from the rice and paddy grounds produce frequent cases of fever and ague.

ECONOMICAL USES OF THE BIRCH-TREE.

[Continued from page 92.]

In the last article on this subject we stated that the sap or juice of the birch is, like almost every other part, applied to useful porposes. This sap is made into beer, wine, and vinegar, besides yielding sugar and spirit. The Russians use the syrup of the sap, without crystallization, as a substitute for sugar. During the siege of Hamburg by the Russians in 1814, almost all the birch-trees in the neighbourhood were destroyed by some of the semi-barbarous soldiers of the Russian army, for the sake of the sap. Sugar may be procured from the sap by boiling and evaporation. Beer is produced by fermenting the sap with yest, hot water, and hops, in the manner of English brewing.

Wine is made from the birch-sap in the following manner:—The sap is first obtained by boring a shallow hole in each tree, near the ground, and on the south side of the trunk; each tree being, in some countries, bored with several holes, instead of one. Each hole has a kind of fosset fixed to it, formed either of a large quill or of a piece of elder-wood deprived of its pith, the outer end of the tube or fosset being placed in a vessel or large bladder to receive the sap. In some places the collectors of the sap cut off the extremity of each branch, tying a vessel or bladder to the end of the wounded part. When a sufficient quantity of sap has been collected, the hole in the tree is stopped with a wooden peg, or the end of the wounded branch is covered with pitch. This operation is always performed in spring, and most sap is said to be procured after a very severe winter. As the sap soon spoils by being kept, several trees are opened at the same time, in order to collect a sufficient quantity at once, which is effected usually about the hour of noon. When the wine is to be made, the sap is boiled with moist sugar or honey, in the proportion of four pounds of sugar to a gallon of sap. While boiling, the scum is taken off

as fast as it rises, till the liquor is quite clear. It is then worked with yest in the usual way. The juice and rind of a lemon and of a Seville orange added to every gallon of clear liquor greatly improves the flavour. Twigs of sweet-brier are sometimes put into the cask when the wine is tunned, to give it a fragrance, an object which used in former times to be effected by using cinnamon and other spices. Wine made in this way, being kept three months before bottling, and twelve months before being used, is both agreeable and wholesome, and effervesces something like champagne.

A useful oil is also obtained from the birch-tree by a kind of distillation effected in the following manner:—An excavation is first made in the ground ten or twelve feet deep, and in the form of an inverted cone, lined on the inside with clay. Birch-bark (from which the product is obtained) being collected and placed in this rude kind of kiln, is covered with turf and then ignited. During the smothered combustion of the bark, oil exudes from it, and passes through a hole made in the bottom of the kiln, into a vessel placed to receive it, from which it is transferred to casks for exportation. The liquor produced consists of oil and pyroligneous acid, and is used for tanning hides, to which it gives the peculiar odour recognised in 'Russia leather.' The oil when purified is quite clear, and is used in medicine, both internally and externally; and the pyroligneous tar-like liquid which is separated from it is used for many of the same purposes as tar.

All the details hitherto given relate to the common or white birch, incontestably the most valuable of all the species. The species called in England the paper birch, in Paris the black birch, and in America the canoe birch, is a valuable American tree, whose characteristic value is expressed by the last of these three appellations, since its bark is extensively employed in the construction of canoes. The canoe birch flourishes principally in the forests of Lower Canada, New Brunswick, and the northern portion of the United States. It attains its largest size in the declivity of hills and in the bottom of fertile valleys; being under such circumstances frequently found with a height of seventy or eighty feet and a diameter of three feet. Its branches are slender, flexible, and covered with a shining brown bark, dotted with white.

The heart or perfect wood of this tree, when first laid open, is of a reddish hue, and the sap is perfectly white. The wood has a fine glossy grain, with a considerable share of strength. In the district of Maine tables are frequently made of it, and stained in imitation of mahogany. A section of the trunk of this tree, a foot or two in length, immediately below the first ramification, often exhibits very elegant undulations of the fibre, resembling bunches of feathers or sheaves of corn: such pieces are divided into thin veneers for inlaying mahogany; and in Boston and the towns situated farther north, they are generally employed by cabinet-makers to embellish their work. The wood affords excellent fuel, and is exported in great quantities from Maine to Boston.

The bark of the canoe birch, in trees not exceeding eight inches in diameter, is of a brilliant white, and is almost indestructible. Trees long since prostrated by time or storms are often met with in the forests, whose trunks appear sound externally, while the bark contains only a friable substance like vegetable mould. In Canada and the Northern United States the country-people place large pieces of the bark immediately below the shingles of the roofs of houses, to form a more impenetrable covering. Baskets, boxes, and portfolios are made of it, sometimes embroidered with silk of different colours. Divided into very thin sheets, it forms a substitute for paper; and, placed between the soles of the shoes and in the crown of the hat, it is a 'waterproof' material, in the best sense of the term.

It is, however, in the construction of canoes that the bark of this species of birch is most valuably employed an application for which it is superior to every other kind of bark. To procure proper pieces, the largest and smoothest trunks are selected. In the spring of the year two circular incisions are made several feet apart, and two longitudinal ones on opposite sides of the tree; after which, by introducing a wooden wedge, the bark is easily detached. These sheets or plates of bark are usually ten or twelve feet long, by two and a half or three feet in width. To form the canoe, these pieces are stitched together by means of fibrous roots of the white spruce, about the size of a quill, which are deprived of the bark, split, and softened in water. The seams are coated with resin. In such canoes as these the Canadian 'voyageurs' have been wont to ascend the Ottawa and other rivers, on their fur-buying expeditions; the canoes being so very light as to be easily carried each on the shoulders of one man. A canoe fitted to convey four passengers will only weigh forty or fifty pounds; but some of them are calculated to contain fifteen persons. It was to such canoes as these that Sir Alexander Mackenzie alluded when, speaking of the equipment of a fleet of canoes at Montreal preparatory to a departure up the Ottawa to the Lakes, he said:—"An European, on seeing one of these slender vessels thus laden, heaped up, and sunk with her gunwale within six inches of the water, would think his fate inevitable in such a boat, when he reflected on the nature of the voyage; but the Canadians are so expert, that few accidents happen."

In the Settlements of the Hudson's Bay Company, tents are made of the bark of the canoe birch, which for that purpose is cut into pieces twelve feet long by four feet wide. These are sewed together by threads made of the white-spruce rootlets; and so rapidly is a tent put up, that a circular one, twenty feet in diameter by ten feet high, requires not above half an hour in pitching. These are called 'rind-tents,' and their utility is acknowledged by all travellers and hunters in those regions. They are used throughout the year; but during the hot months of June, July, and August they are found particularly acceptable.

There are other species of birch more or less valuable in the arts. The Tall birch, an American species, is a beautiful tree, often rising to a height of seventy or eighty feet, and having the trunk uniform, straight, and destitute of leaves for a height of thirty or forty feet. It is particularly remarkable for the colour and arrangement of its epidermis, which is of a brilliant golden yellow, and frequently divides itself into very fine strips, rolled backwards at the ends and attached in the middle. The leaves, the bark, and the young shoots have all an agreeable taste and smell. It abounds in the forests of New Brunswick, Nova Scotia, and Maine; and is met with more sparingly in New Jersey and Pennsylvania, where it is found in moist and shady situations. The wood is not equal to that of some other kinds of birch, but is at the same time strong, and, when well polished, fitted to make handsome furniture. In Nova Scotia, and in the district of Maine, it is found by experience to be every way proper for that part of the frame-work of vessels which always remains in the water. In Maine it is employed for the yokes of cattle and for the frames of sledges; and in Nova Scotia the young saplings are almost exclusively employed for making the hoops of casks. Boards of this tree were formerly imported into Ireland and Scotland in large quantities, and were much in use in joinery. The wood is excellent for fuel, and the bark is largely employed by tanners.

The wood of the Pliant birch or Cherry birch is deemed better than that of any other American species. This tree, in favourable situations, exceeds seventy feet in height, with a diameter of nearly three feet. The outer bark, in old trees, detaches itself transversely at intervals, in hard plates or sheets six or eight inches broad; but in trees with trunks not more than eight inches in diameter, the bark is smooth, greyish, and perfectly similar in its colour and organization to that of the cherry-tree: hence one of its names. In the neighbourhood of New York this is one of the first trees to renew its leaves; these, during a fortnight after their appearance, are covered with a thick silvery down, which afterwards disappears. When bruised the leaves diffuse a very sweet odour; and as they retain this property when dry if carefully preserved, they make an agreeable substitute for tea, with the aid of milk and sugar. The wood, when freshly cut, is of a rosy hue, which deepens by exposure to the light. Its grain is fine and close: it possesses a considerable degree of strength, and takes a brilliant polish. In Massachusetts, Connecticut, and New York the wood of this birch is next in esteem to that of the wild cherry. Tables, bedsteads, arm-chairs, sofas, coach-panels, shoe-lasts, and a great many other articles are made of it. Hunter, in his notes to Evelyn's 'Sylva,' says that the sap of this tree is used by the inhabitants of Kamtschatka without previous fermentation; and that the natives strip off the bark when in a green state, cut it into long narrow strips like vermicelli, and, after drying it, stew it with their caviare.

The Dwarf birch, a native of Lapland, Sweden, Russia, Scotland, Canada, and all the colder regions of Europe and America, is a very useful tree to the Laplanders. Its branches furnish them with their beds and their chief fuel; its leaves yield a yellow dye, better than that obtained from the common birch; its seeds afford nourishment to the ptarmigan, or white partridge, which supplies a considerable portion of the Laplanders' food, and also forms an important article of commerce; and, for their medicine, it produces a peculiar kind of fungus, from which the *moxa* or *amadou* is prepared, and which the Laplanders consider an efficacious remedy in all painful diseases.

The Black birch, like many others which we have noticed, is an American species, growing abundantly in Maryland, Virginia, Carolina, and Georgia. It grows, with the greatest luxuriance, on the sides of limpid streams which have a gravelly bed, and the banks of which are not marshy. The wood of this species is compact, and very nearly white; and the colour of the sap-wood and the heart-wood is very nearly the same. It is longitudinally marked by red veins, which intersect each other in different directions. The negroes make bowls and trays of it. The hoops for rice-casks are made of its young shoots, and of branches not exceeding an inch in diameter; and its spray is much used for making brooms.

We may terminate this brief notice by remarking that the use of the common birch-tree, in artificial plantations in Britain, is chiefly as coppice-wood; it is cut, every five or six years, for brooms, hoops, wattled-rods, crate-rods, &c.; every ten or twelve years, for faggot-wood, poles, fencing, and bark for tanners, the value of which is about half that of oak-bark; and every fifteen or twenty years, for herring-casks, &c.

FLOATING AND FLYING BRIDGES.

The military operations by which a body of troops is conveyed across a river supply the most instructive examples of the steps from whence have resulted the masterly and substantial bridges of modern times. The expedients which an army would adopt in a strange country are in some measure analogous to those which a rude nation would find most available, since the means at the disposal of both are very limited.

A canoe or raft, urged across the stream by oars, is obviously the most primitive mode of transit, and calls for very little notice here, a paper on the "Boats of Rude Nations" having been given in our last volume. But the operations of our military commanders have frequently brought to light the means of constructing boats at a few hours' notice, from materials found near the stream itself. The Duke of Wellington (then Colonel Wellesley), in his Indian campaign of 1800, having occasion to cross a river which by floods had become too deep to be fordable, caused a number of *basket-boats* to be constructed, of materials easily procurable: the boats were soon made, the army crossed the stream, and the commander fully succeeded in his object. Such basket-boats are much used in India, and are made as follows:—a number of pieces of split bamboo are laid on the ground, crossing each other near their centres, and fastened together with thongs. The ends of the bamboos are then raised to a sufficient height, fixed by stakes at due distances from each other, and then bound together by slips of bamboo, introduced alternately over and under the ribs, beginning from the bottom and working upwards, till the skeleton is completed. The ends of the ribs, above the intended height or depth of the basket, are then cut off, and the stakes removed. The frame is next turned over, and covered with hides (those of the animals, for instance, which may have been killed for food), the hide being secured with leather thongs. Such basket-boats are frequently made in India with a length of fifteen feet and a breadth of three; and such an one is capable of carrying thirty men, or a gun-carriage, or bullocks or horses, whose heads are fastened to the stern of the boat, and who are made to swim across.

The general of an army is sometimes constrained to the adoption of extraordinary expedients in crossing a river, where no boats are to be found, and time and circumstances prevent him from making any. The most simple of all bridges would be a plank reaching from one bank to the other; but when the width of the stream renders this impossible, and several planks in length are necessary, the question arises how these planks are to be supported above the surface of the water. It is for the purpose of supplying these supports that a regular army is provided with *pontoons*, which will be better understood if we speak first of more rude and simple arrangements. Sir Howard Douglas says, that when he was with the Peninsular army, he was prepared to adopt a plan of crossing rivers by forming a bridge in which the planks were supported by *inflated skin bags*, whose buoyancy kept up the superstructure. In Spain, bags made of animal skins are commonly used for containing wine; and such bags, inflated with air, have been found to possess the requisite buoyancy. A light frame-work of planks is formed, and placed on a row of such bags, the sides of the frame descending at the edge to enclose the bags; and unless the latter become perforated by musket-shots, they still retain their buoyancy for a sufficient length of time to allow of a passage across the stream. Sir Howard Douglas states that where an army is provided with fresh meat, the hides of the slaughtered animals may be used for this purpose; and he details an experiment made on the buoyancy of an ox-hide weighing nearly fifty pounds. It was trimmed into a circular form, about five feet and a half in diameter, drawn together at the edge, and firmly bound round a tube made of alder-wood, having the pith removed, and a piece of leather nailed upon the inner end, as a valve to prevent the air from escaping. The vessel was then inflated by a common hand-bel-

lows, and acquired a buoyancy which enabled it to bear, in the water, a weight of three hundred pounds for five hours, and even to bear half that weight for a period of twenty-four hours, although the hide was not covered with any composition to close the pores.

It has been proposed in France to employ, as a support for the framework of a temporary bridge, canvas bags coated with a solution of India-rubber. The bags used experimentally were of an elliptical shape, six feet long, two feet wide in the centre, and two feet deep. The upper surface was fastened to a frame rather longer and wider than the bag, with sides a few inches high, forming consequently a light shallow case, in which the bags might be packed for travelling. To inflate the bag, two or three men, standing on planks attached to the lower surface of the bag, lifted the frame, by which the bag became stretched, and air rushed in through a cock or spigot, which was afterwards closed; and in this way the bag was filled with air in a few seconds, without the aid of bellows. The bags are of course intended, by their buoyancy in water, to support the planks for a temporary bridge. Thévénot describes a similar contrivance as being in use to cross the Tigris, and even to travel down that river. The whole structure is called a *kalec*, and is formed thus:—the kalec is composed of twenty rows of inflated bags, each row formed of thirteen bags lashed to a pole. Over these, placed about two feet and a half apart, the floor is laid, forming a platform twenty-four feet by eighteen; and on this platform the merchandise, &c. is placed.

Air-tight cases, made of more durable materials than skin or canvas, have been more or less used as the floating support of temporary bridges. A German engineer of the last century constructed a bridge in the following manner:—he formed air-tight cases of light planks, each case being five feet long, one foot broad, and one deep. The cases were divided into four compartments each, by interior partitions, for the double purpose of preventing one leak from filling a whole case, and of giving it strength to resist the outward pressure. Four of these cases lashed together side by side formed a raft, weighing about three hundred pounds, and capable of sustaining a frame of boarding at the top. To make a bridge of such rafts for infantry, one of the rafts was placed in the water, and pushed off to make room for a second, which was then launched, and connected with the first by the framing of the two being clamped together. Both rafts, so connected, were then pushed onwards, to give place to the next, and so on till the whole line of communication was formed. The rafts were kept steady from the movement of the current by a rope stretched across the stream from bank to bank. Infantry marching in single file were capable of passing along such a bridge. Twenty of such cases, forming a raft measuring twenty feet by five, would form one element of a bridge sufficiently strong for the passage of cavalry.

Empty casks have often been used as the buoyant supporters of a temporary bridge. The Russians, in their wars against the Turks and Tartars, have always been obliged to carry across the deserts supplies of water sufficient for several days' consumption; and the casks, after having served for this purpose, have been generally reserved for constructing rafts and bridges. In such cases each company took with it a large barrel of water for its own use; and in order to make the empty vessels available for the purposes of a bridge, eight or ten planks are likewise carried by the men of each company, in turn. Nine casks, each two feet long by two and a half diameter in the largest part, supporting a frame-work of timber nine feet long, is calculated, when the floated casks are filled with air and well corked, to bear a weigh of nearly four thousand pounds; and a bridge of such rafts would bear cavalry in single or infantry in double file.

Sometimes boats, casks, air-tight cases, and bags are all equally beyond the reach of an army, or are not fitted for the object in view, when the troops are about to cross a river. In such case a continuous raft of timber is sometimes constructed, reaching from bank to bank; and if trees are scarce, wood is procured by that sort of military licence which the events of war so often illustrate. Sir H. Douglas, in his work on 'Military Bridges,' gives a remarkable instance of this kind in connection with the Duke of Wellington's campaigns in the Peninsula. When, in July, 1809, the British head-quarters were at Placentia, it became necessary to secure the means by which a junction might be formed with Cuesta; and two companies were accordingly ordered to construct a raft-bridge over the river Tietar at Baragona. The officer to whom the execution of this duty was committed could find no materials for his bridge, except the timber of a large inn and its outhouses, about a mile and a half distant, and some pine-trees that grew in a neighbouring wood. The inn was thereupon unroofed, and all the available timbers appropriated, including six large beams of dry fir, three or four hundred rafters, six doors, and the mangers from the stable. With the large beams was formed a raft, measuring twenty feet by twelve, capable of supporting a flooring (made of the planks of the mangers) thirty feet in length. This raft occupied the deepest part of the river, and was connected with either bank by a flooring of the doors and mangers, supported by piles driven into the shallow bed of the river. A strong rope, stretched across the river, and secured at each end, kept the raft in its place. On the singular raft-bridge thus constructed, the whole British force crossed the river on the 18th of July.

On another but similar occasion, when a British force wanted to cross the river Alviella, in pursuit of Marshal Ney's force, they pulled down an oil-mill to furnish beams for a raft, and used the doors of the houses and the materials of the corn-chests (which in Portugal are very large) for planking; with these materials a communication was speedily restored in a very ingenious manner, though neither nails nor tools could be procured.

A "bridge of boats" is a medium of communication much more frequently adopted in military manœuvres than any of the preceding, when the facilities for its formation are at hand. In such a case, when a river is about to be crossed, all the boats are seized from the neighbouring banks, and applied to immediate service. The boats are ranged side by side, or at least parallel, with head and stern in the direction of the river's course, so as to present their sides towards the banks. Boats as nearly of one size as possible are placed next to each other, in order to maintain an uniform level. An interval is left between every two boats, and planks are laid across from boat to boat, the planks and the boats being so secured as to make a roadway sufficiently firm for an army. Bridges of boats have been in this way constructed of enormous dimensions. It is recorded that in 1739, when a Russian army was about to cross the Dnieper, an inundation had caused the river to overflow the adjacent country to a width of two leagues; nevertheless the Russians formed a bridge of boats across the entire breadth.

In France *bateaux*, or flat-bottomed boats, are sometimes provided, to be carried with the army to the place where a river is to be crossed, and there used, instead of depending on the uncertainty of finding a supply of boats on hand.

[To be continued.]